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HAMILTON, BROOK, SMITH & REYNOLDS, P.C.
530 VIRGINIA ROAD
P.O. BOX 9133
CONCORD, MA 01742-9133

EXAMINER	
THANGAVELU, KANDASAMY	

ART UNIT	PAPER NUMBER
2123	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	10/005,481	EL ATA ET AL.
	Examiner	**Art Unit**
	Kandasamy Thangavelu	2123

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 October 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *26 October 2001* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *7/11/02 and 8/7/02*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☒ Other: *See Continuation Sheet*.

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Continuation of Attachment(s) 6). Other: PTO-1449 of 10/14/04, 5/9/05 and 6/2/05.

DETAILED ACTION

1. Claims 1-26 of the application have been examined.

Information Disclosure Statement

2. Acknowledgment is made of the information disclosure statements filed on July 11, 2002, August 7, 2002, October 14, 2004, May 9, 2005 and June 2, 2005 together with copies of various papers. The patents and papers have been considered.

Drawings

3. This application has been filed with informal drawings which are difficult to read with unrecognizable character sizes in several drawings. Formal drawings with appropriate character sizes are required for further evaluation of the application.

Abstract

4. The abstract is objected to because of the following informalities:

The first sentence in Lines 4-5 does not end with a period.

Appropriate correction is required.

Claim Objections

5. The following is a quotation of 37 C.F.R § 1.75 (d)(1):

> The claim or claims must conform to the invention as set forth in the remainder of the specification and terms and phrases in the claims must find clear support or antecedent basis in the description so that the meaning of the terms in the claims may be ascertainable by reference to the description.

6. Claim 23 is objected to because of the following informalities:

In Claim 23, Lines 23-25, "the actual performance metrics being comparing against the calculated performance metrics to verify conformance of the prototype to the predictive model" appears to be incorrect and it appears that it should be "the actual performance metrics being compared against the calculated performance metrics to verify conformance of the prototype to the predictive model".

Appropriate correction is required.

Claim Rejections - 35 USC § 101

7. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

8. Claims 1, 3-8, 14 and 16-21 are rejected under 35 U.S.C. 101 because the claimed inventions are directed to non-statutory subject matter.

8.1 Method claims 1 and 3-8 are rejected for reciting a process that is not directed to the technological arts.

Regarding claim 1, this claim is directed at a method for developing an information system through multiple development phases, whereas none of the limitations describe any type of computer-implemented steps. To be statutory, the utility of an invention must be within the technological arts. *In re Musgrave*, 167 USPQ 280, 289-90 (CCPA, 1970). The definition of "technology" is the "application of science and engineering to the development of machines and procedures in order to enhance or improve human conditions, or at least to improve human efficiency in some respect." (Computer Dictionary 384 (Microsoft Press, 2d ed. 1994)).

Dependent claims 3-8 depend on Claim 1 but do not add further statutory steps.

The limitations recited in claims 1, 3-8 contain no language suggesting these claims are intended to be within the technological arts.

8.2 System claims 14, 16-21 are rejected for reciting a system that is not directed to the technological arts.

Independent claim 14 recites a system for developing an information system through multiple development phases. The limitations recited in claim contain abstract modules and steps which are not statutory subject matter. To be statutory, the system should include computer system hardware components and software components in memory which will be required to implement the method.

Dependent claims 16-21 depend on Claim 14 but do not add further statutory elements.

9. Claims 1, and 2-8 would be **statutory** if claim 1 is rewritten as a computer implemented method for developing an information system through multiple development phases.

Claims 14 and 16-21 would be **statutory** if claim 14 is rewritten as:

A system for developing an information system through multiple development phases, comprising:

a computer with:

a processor to execute a program of instructions stored in the memory of the computer;

a memory to store a program of instruction for performing a method for developing an information system through multiple development phases; and

a display to display results of multiple development phases;

at one or more design phases, a performance metric calculation module calculating performance metrics from a predictive model of an information system design; ...

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.

11. The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

12. Claims 1-4, 9-13, 14-17 and 22-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Peterson et al.** (U.S. Patent 6,327,551) in view of **McDonald et al.** (U.S. Patent 5,881,268).

12.1 **Peterson et al.** teaches system design method. Specifically, as per claim 14, **Peterson et al.** teaches a system for developing an information system through multiple development phases (Abstract, L1-9; CL1, L5-8; Fig. 1; CL1, L18-33; CL1, L63-65; CL4, L27-42; CL7, L67 to CL8, L7); comprising:

one or more design phases (Fig. 1, Items 3 and 4; CL3, L11-13);

a construction module validating the information system design (CL2, L56-59; CL3, L11-13; CL6, L9-10); a set of predefined performance requirements (CL2, L1-4; CL4, L8-11); and

proceeding to a further development phase if the design is validated (Fig. 1, Items 3,4 and 5).

Peterson et al. does not expressly teach at one or more design phases, a performance metric calculation module calculating performance metrics from a predictive model of an information system design. **McDonald et al.** teaches at one or more design phases, a performance metric calculation module calculating performance metrics from a predictive model of an information system design (Abstract, L1-6; Abstract, L12-16; Fig. 2, Item 36; CL1, L30-46), because that would allow determination of the effect on performance of different distributions of the application processes over the system, at an early stage in the application design (Abstract, L3-6); allow the user to obtain the performance projections for application processes over different distributions of the performance workload (Abstract, L12-16); and allow comparison of various design alternatives (CL2, L59-62). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the system of **Peterson et al.** with the system of **McDonald et al.** that included at one or more design phases, a performance metric calculation module calculating performance metrics from a predictive model of an information system design. The artisan would have been motivated because that would allow determination of the effect on performance of different distributions of the application processes over the system, at an early stage in the application design; allow the user to obtain the performance projections for application processes over different distributions of the performance workload; and allow comparison of various design alternatives.

Peterson et al. does not expressly teach a construction module validating the information system design by comparing the calculated performance metrics against a set of predefined performance requirements, ensuring that the design satisfies the set of performance requirements at each design phase. **McDonald et al.** teaches a construction module validating the information

system design by comparing the calculated performance metrics against a set of predefined performance requirements, ensuring that the design satisfies the set of performance requirements at each design phase (Fig. 3, Items 40, 52, 54 and 56; CL1, L30-46), because that would allow modifying the system parameters and the corresponding model parameters and predicting the system performance under modified conditions, allowing a range of alternatives to be examined (CL1, L43-46); and allow comparison of various design alternatives (CL2, L59-62). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the system of **Peterson et al.** with the system of **McDonald et al.** that included a construction module validating the information system design by comparing the calculated performance metrics against a set of predefined performance requirements, ensuring that the design satisfied the set of performance requirements at each design phase. The artisan would have been motivated because that would allow modifying the system parameters and the corresponding model parameters and predicting the system performance under modified conditions, allowing a range of alternatives to be examined; and allow comparison of various design alternatives.

12.2 As per claim 15, **Peterson et al.** and **McDonald et al.** teach the system of claim 14. **Peterson et al.** teaches a prototype of at least a portion of the information system being constructed from the validated design (CL1, L37-43; CL1, L63-65; CL4, L43-46; CL7, L17-20); and

the prototype being validated by comparing requirements against actual performance metrics obtained from the prototype (CL7, L30-32; CL7, L35-39).

Peterson et al. does not expressly teach at one or more construction phases, the performance metric calculation module calculating performance metrics from a predictive model of a validated information system design. **McDonald et al.** teaches at one or more construction phases, the performance metric calculation module calculating performance metrics from a predictive model of a validated information system design (Abstract, L1-6; Abstract, L12-16; Fig. 2, Item 36; CL1, L30-46), because that would allow determination of the effect on performance of different distributions of the application processes over the system, at an early stage in the application design (Abstract, L3-6); allow the user to obtain the performance projections for application processes over different distributions of the performance workload (Abstract, L12-16); and allow comparison of various design alternatives (CL2, L59-62). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the system of **Peterson et al.** with the system of **McDonald et al.** that included at one or more construction phases, the performance metric calculation module calculating performance metrics from a predictive model of a validated information system design. The artisan would have been motivated because that would allow determination of the effect on performance of different distributions of the application processes over the system, at an early stage in the application design; allow the user to obtain the performance projections for application processes over different distributions of the performance workload; and allow comparison of various design alternatives.

Peterson et al. does not expressly teach the prototype being validated by comparing the calculated performance metrics against actual performance metrics obtained from the prototype,

ensuring the prototype conforms to the predictive model. **McDonald et al.** teaches the prototype being validated by comparing the calculated performance metrics against actual performance metrics obtained from the prototype, ensuring the prototype conforms to the predictive model (Fig. 3, Items 40, 52, 54 and 56; CL1, L30-46), because that would allow modifying the system parameters and the corresponding model parameters and predicting the system performance under modified conditions, allowing a range of alternatives to be examined (CL1, L43-46); and allow comparison of various design alternatives (CL2, L59-62). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the system of **Peterson et al.** with the system of **McDonald et al.** that included the prototype being validated by comparing the calculated performance metrics against actual performance metrics obtained from the prototype, ensuring the prototype conforms to the predictive model. The artisan would have been motivated because that would allow modifying the system parameters and the corresponding model parameters and predicting the system performance under modified conditions, allowing a range of alternatives to be examined; and allow comparison of various design alternatives.

12.3 As per claim 16, **Peterson et al.** and **McDonald et al.** teach the system of claim 14. **Peterson et al.** teaches the design being modified (CL3, L11-13); and

proceeding to a further development phase if the modified design is validated (Fig. 1, Items 3,4 and 5).

Peterson et al. does not expressly teach the design being modified if the calculated performance metrics do not satisfy the set of performance requirements. **McDonald et al.** teaches the design being modified if the calculated performance metrics do not satisfy the set of performance requirements (Fig. 3, Items 40, 52, 54 and 56; CL1, L30-46), because that would allow modifying the system parameters and the corresponding model parameters and predicting the system performance under modified conditions, allowing a range of alternatives to be examined (CL1, L43-46); and allow comparison of various design alternatives (CL2, L59-62). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the system of **Peterson et al.** with the system of **McDonald et al.** that included the design being modified if the calculated performance metrics did not satisfy the set of performance requirements. The artisan would have been motivated because that would allow modifying the system parameters and the corresponding model parameters and predicting the system performance under modified conditions, allowing a range of alternatives to be examined; and allow comparison of various design alternatives.

Peterson et al. does not expressly teach the performance metric calculation module calculating updated performance metrics from a predictive model of the modified design; and the construction module validating the modified design by comparing the updated performance metrics against the set of performance requirements, ensuring that the modified design satisfies the set of performance requirements. **McDonald et al.** teaches the performance metric calculation module calculating updated performance metrics from a predictive model of the modified design; and the construction module validating the modified design by comparing the updated performance metrics against the set of performance requirements, ensuring that the

modified design satisfies the set of performance requirements (Fig. 3, Items 40, 52, 54 and 56; CL1, L43-46), because that would allow modifying the system parameters and the corresponding model parameters and predicting the system performance under modified conditions, allowing a range of alternatives to be examined (CL1, L43-46); and allow comparison of various design alternatives (CL2, L59-62). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the system of **Peterson et al.** with the system of **McDonald et al.** that included the performance metric calculation module calculating updated performance metrics from a predictive model of the modified design; and the construction module validating the modified design by comparing the updated performance metrics against the set of performance requirements, ensuring that the modified design satisfied the set of performance requirements. The artisan would have been motivated because that would allow modifying the system parameters and the corresponding model parameters and predicting the system performance under modified conditions, allowing a range of alternatives to be examined; and allow comparison of various design alternatives.

12.4 As per claim 17, **Peterson et al.** and **McDonald et al.** teach the system of claim 16. **Peterson et al.** teaches that the design is modified by scaling the number or kind of components of the design (CL2, L65-67).

12.5 As per claim 22, **Peterson et al.** teaches a system for developing an information system through multiple development phases (Abstract, L1-9; CL1, L5-8; Fig. 1; CL1, L18-33; CL1, L63-65; CL4, L27-42; CL7, L67 to CL8, L7); comprising:

at one or more construction phases, a prototype of at least a portion of an information system being constructed from a validated design (CL1, L37-43; CL1, L63-65; CL4, L43-46; CL7, L17-20);

the prototype being validated by comparing requirements against actual performance metrics obtained from the prototype (CL7, L30-32; CL7, L35-39); and

proceeding to a further development phase if the prototype is validated (Fig. 1, Items 4, 5 and 6).

Peterson et al. does not expressly teach a performance metric calculation module calculating performance metrics from a predictive model of the validated design. **McDonald et al.** teaches a performance metric calculation module calculating performance metrics from a predictive model of the validated design (Abstract, L1-6; Abstract, L12-16; Fig. 2, Item 36; CL1, L30-46), because that would allow determination of the effect on performance of different distributions of the application processes over the system, at an early stage in the application design (Abstract, L3-6); allow the user to obtain the performance projections for application processes over different distributions of the performance workload (Abstract, L12-16); and allow comparison of various design alternatives (CL2, L59-62). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the system of **Peterson et al.** with the system of **McDonald et al.** that included a performance metric calculation module calculating performance metrics from a predictive model of the validated design. The artisan would have been motivated because that would allow determination of the effect on performance of different distributions of the application processes over the system, at an early stage in the

application design; allow the user to obtain the performance projections for application processes over different distributions of the performance workload; and allow comparison of various design alternatives.

Peterson et al. does not expressly teach the prototype being validated by comparing the calculated performance metrics against actual performance metrics obtained from the prototype, ensuring the prototype conforms to the predictive model. **McDonald et al.** teaches the prototype being validated by comparing the calculated performance metrics against actual performance metrics obtained from the prototype, ensuring the prototype conforms to the predictive model (Fig. 3, Items 40, 52, 54 and 56; CL1, L30-46), because that would allow modifying the system parameters and the corresponding model parameters and predicting the system performance under modified conditions, allowing a range of alternatives to be examined (CL1, L43-46); and allow comparison of various design alternatives (CL2, L59-62). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the system of **Peterson et al.** with the system of **McDonald et al.** that included the prototype being validated by comparing the calculated performance metrics against actual performance metrics obtained from the prototype, ensuring the prototype conforms to the predictive model. The artisan would have been motivated because that would allow modifying the system parameters and the corresponding model parameters and predicting the system performance under modified conditions, allowing a range of alternatives to be examined; and allow comparison of various design alternatives.

12.6 As per claim 23, **Peterson et al.** and **McDonald et al.** teach the system of claim 22. **Peterson et al.** teaches actual performance metrics from the prototype being obtained in response to different workload types or volume (CL7, L36-40).

Peterson et al. does not expressly teach the performance metric calculation module calculating performance metrics from the predictive model in response to different workload type or volume. **McDonald et al.** teaches the performance metric calculation module calculating performance metrics from the predictive model in response to different workload type or volume (Abstract, L1-6; Abstract, L12-16; Fig. 2, Item 32 and Item 36; CL1, L30-46; Fig. 7), because that would allow determination of the effect on performance of different distributions of the application processes over the system, at an early stage in the application design (Abstract, L3-6); allow the user to obtain the performance projections for application processes over different distributions of the performance workload (Abstract, L12-16); and allow comparison of various design alternatives (CL2, L59-62). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the system of **Peterson et al.** with the system of **McDonald et al.** that included the performance metric calculation module calculating performance metrics from the predictive model in response to different workload type or volume. The artisan would have been motivated because that would allow determination of the effect on performance of different distributions of the application processes over the system, at an early stage in the application design; allow the user to obtain the performance projections for application processes over different distributions of the performance workload; and allow comparison of various design alternatives.

Peterson et al. does not expressly teach the actual performance metrics being comparing against the calculated performance metrics to verify conformance of the prototype to the predictive model. **McDonald et al.** teaches the actual performance metrics being comparing against the calculated performance metrics to verify conformance of the prototype to the predictive model (Fig. 3, Items 40, 52, 54 and 56; CL1, L30-46), because that would allow modifying the system parameters and the corresponding model parameters and predicting the system performance under modified conditions, allowing a range of alternatives to be examined (CL1, L43-46); and allow comparison of various design alternatives (CL2, L59-62). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the system of **Peterson et al.** with the system of **McDonald et al.** that included the actual performance metrics being comparing against the calculated performance metrics to verify conformance of the prototype to the predictive model. The artisan would have been motivated because that would allow modifying the system parameters and the corresponding model parameters and predicting the system performance under modified conditions, allowing a range of alternatives to be examined; and allow comparison of various design alternatives.

12.7 As per claim 24, **Peterson et al.** and **McDonald et al.** teach the system of claim 23. **Peterson et al.** teaches the prototype being modified (CL7, L36-40).

Peterson et al. does not expressly teach the prototype being modified such that the actual performance metrics conform to the calculated performance metrics of the predictive model. **McDonald et al.** teaches the prototype being modified such that the actual performance metrics

conform to the calculated performance metrics of the predictive model (Fig. 3, Items 40, 52, 54 and 56; CL1, L30-46), because that would allow modifying the system parameters and the corresponding model parameters and predicting the system performance under modified conditions, allowing a range of alternatives to be examined (CL1, L43-46); and allow comparison of various design alternatives (CL2, L59-62). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the system of **Peterson et al.** with the system of **McDonald et al.** that included the prototype being modified such that the actual performance metrics conform to the calculated performance metrics of the predictive model. The artisan would have been motivated because that would allow modifying the system parameters and the corresponding model parameters and predicting the system performance under modified conditions, allowing a range of alternatives to be examined; and allow comparison of various design alternatives.

12.8 As per claim 25, **Peterson et al.** and **McDonald et al.** teach the system of claim 22. **Peterson et al.** does not expressly teach application or system component models in the predictive model being replaced if a component described in the validated design is substituted in the prototype. **McDonald et al.** teaches application or system component models in the predictive model being replaced if a component described in the validated design is substituted in the prototype (Fig. 3, Items 40, 52, 54 and 56; CL1, L43-46), because that would allow modifying the system parameters and the corresponding model parameters and predicting the system performance under modified conditions, allowing a range of alternatives to be examined (CL1, L43-46); and allow comparison of various design alternatives (CL2, L59-62). It would

have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the system of **Peterson et al.** with the system of **McDonald et al.** that included application or system component models in the predictive model being replaced if a component described in the validated design is substituted in the prototype. The artisan would have been motivated because that would allow modifying the system parameters and the corresponding model parameters and predicting the system performance under modified conditions, allowing a range of alternatives to be examined; and allow comparison of various design alternatives.

12.9 As per claim 26, **Peterson et al.** and **McDonald et al.** teach the system of claim 14. **Peterson et al.** does not expressly teach the calculated performance metrics being used to evaluate tradeoffs in maintaining components that implement services for enhancing quality and robustness of the information system, but result in performance metrics that do not satisfy business or performance requirements. **McDonald et al.** teaches the calculated performance metrics being used to evaluate tradeoffs in maintaining components that implement services for enhancing quality and robustness of the information system, but result in performance metrics that do not satisfy business or performance requirements (CL1, L30-46), because that would allow comparison of various design alternatives (CL1, L43-46; CL2, L59-62). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the system of **Peterson et al.** with the system of **McDonald et al.** that included the calculated performance metrics being used to evaluate tradeoffs in maintaining components that implemented services for enhancing quality and robustness of the information system, but resulted in performance metrics that did not satisfy business or performance requirements. The

artisan would have been motivated because that would allow comparison of various design alternatives.

12.10 As per Claims 1-4 and 9-13, these are rejected based on the same reasoning as Claims 14-17 and 22-26, supra. Claims 1-4 and 9-13 are method claims reciting the same limitations as Claims 14-17 and 22-26, as taught throughout by **Peterson et al.** and **McDonald et al.**

13. Claims 5-7 and 18-20 rejected under 35 U.S.C. 103(a) as being unpatentable over **Peterson et al.** (U.S. Patent 6,327,551) in view of **McDonald et al.** (U.S. Patent 5,881,268), and further in view of **Dellarocas et al.** (U.S. Patent 6,370,681).

13.1 As per claim 18, **Peterson et al.** and **McDonald et al.** teach the system of claim 14. **Peterson et al.** teaches an input module providing a description of business goals and various components (CL2, L1-7; CL4, L7-10; CL2, L65-67).

Peterson et al. does not expressly teach an input module providing a description of business components and interactions from a business design to the construction module; and the business layer being generated from the description of the business components and interactions. **Dellarocas et al.** teaches an input module providing a description of business components and interactions from a business design to the construction module; and the business layer being generated from the description of the business components and interactions (CL2, L3-4; CL4, L65 to CL5, L3), because that would allow the designers to generate new applications by simply selecting existing components to implement the activities (CL2, L64-66; CL4, L67 to CL5, L2).

It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the system of **Peterson et al.** with the system of **Dellarocas et al.** that included an input module providing a description of business components and interactions from a business design to the construction module; and the business layer being generated from the description of the business components and interactions. The artisan would have been motivated because that would allow the designers to generate new applications by simply selecting existing components to implement the activities.

Peterson et al. does not expressly teach the construction module generating the predictive model of the information system comprising a business layer, an application layer, and a system layer. **McDonald et al.** teaches the construction module generating the predictive model of the information system comprising a business layer, an application layer, and a system layer (Abstract, L1-6; CL1, L47-59), because that would allow determination of the effect on performance of different distributions of the application processes over the system, at an early stage in the application design (Abstract, L3-6); allow the user to obtain the performance projections for application processes over different distributions of the performance workload (Abstract, L12-16); and the method of layers would divide the model into complementary models for different sets of components and combine the results to provide the performance estimates of the system under evaluation (CL1, L56-59). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the system of **Peterson et al.** with the system of **McDonald et al.** that included the construction module generating the predictive model of the information system comprising a business layer, an application layer, and a system layer. The artisan would have been motivated because that would allow determination

of the effect on performance of different distributions of the application processes over the system, at an early stage in the application design; allow the user to obtain the performance projections for application processes over different distributions of the performance workload; and the method of layers would divide the model into complementary models for different sets of components and combine the results to provide the performance estimates of the system under evaluation.

Peterson et al. does not expressly teach the application and system layers being generated by associating each business component in the business layer to default application and system component models. **Dellarocas et al.** teaches the application and system layers being generated by associating each business component in the business layer to default application and system component models (Abstract, L4-7; CL4, L66 to CL5, L3; CL10, L64 to CL11, L1), because software components represent the core functional pieces of an application and deal with concepts specific to the application (Abstract L4-7); and it would allow the designers to generate new applications by simply selecting existing components to implement the activities (CL2, L64-66; CL4, L67 to CL5, L2). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the system of **Peterson et al.** with the system of **Dellarocas et al.** that included the application and system layers being generated by associating each business component in the business layer to default application and system component models. The artisan would have been motivated because software components would represent the core functional pieces of an application and would deal with concepts specific to the application; and it would allow the designers to generate new applications by simply selecting existing components to implement the activities.

Peterson et al. does not expressly teach the performance metric calculation module calculating performance metrics from the business layer to validate the business design. **McDonald et al.** teaches the performance metric calculation module calculating performance metrics from the business layer to validate the business design (Abstract, L1-6; Abstract, L12-16; Fig. 2, Item 36; CL1, L30-46), because that would allow determination of the effect on performance of different distributions of the application processes over the system, at an early stage in the application design (Abstract, L3-6); allow the user to obtain the performance projections for application processes over different distributions of the performance workload (Abstract, L12-16); and allow comparison of various design alternatives (CL2, L59-62). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the system of **Peterson et al.** with the system of **McDonald et al.** that included the performance metric calculation module calculating performance metrics from the business layer to validate the business design. The artisan would have been motivated because that would allow determination of the effect on performance of different distributions of the application processes over the system, at an early stage in the application design; allow the user to obtain the performance projections for application processes over different distributions of the performance workload; and allow comparison of various design alternatives.

13.2 As per claim 19, **Peterson et al., McDonald et al.** and **Dellarocas et al.** teach the system of claim 18. **Peterson et al.** does not expressly teach that the default application and system component models are selected from a standard component library. **Dellarocas et al.** teaches that the default application and system component models are selected from a standard

component library (Abstract, L4-7; CL4, L66 to CL5, L3; CL30, L38-42), because that would allow the designers to generate new applications by simply selecting existing components to implement the activities (CL4, L67 to CL5, L2); the designers can reuse the same architectural description in order to reconstruct the applications after one or more activities have been replaced by alternative implementations (CL5, L11-14); the description of software applications as sets of components interconnected through dependencies may help designers to structure their thinking about how best to integrate the components together; it will assist them to explore alternative ways of organizing the same set of components to select the one which exhibits the optimal design properties and performance (CL5, L22-30); and collecting components into component libraries makes them easily accessible to the community of designers (CL30, L41-42). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the system of **Peterson et al.** with the system of **Dellarocas et al.** that included the default application and system component models being selected from a standard component library. The artisan would have been motivated because that would allow the designers to generate new applications by simply selecting existing components to implement the activities; the designers could reuse the same architectural description in order to reconstruct the applications after one or more activities had been replaced by alternative implementations; the description of software applications as sets of components interconnected through dependencies might help designers to structure their thinking about how best to integrate the components together; it would assist them to explore alternative ways of organizing the same set of components to select the one which exhibited the optimal design properties and performance;

and collecting components into component libraries would make them easily accessible to the community of designers.

13.3 As per claim 20, **Peterson et al., McDonald et al.** and **Dellarocas et al.** teach the system of claim 18. **Peterson et al.** teaches an input module providing a description of business goals and various components (CL2, L1-7; CL4, L7-10; CL2, L65-67).

Peterson et al. does not expressly teach an input module providing a description of business components, application components, system components, and interactions from an information system design to the construction module; and the business layer being generated from the description of the business components and interactions. **Dellarocas et al.** teaches an input module providing a description of business components, application components, system components, and interactions from an information system design to the construction module; and the business layer being generated from the description of the business components and interactions (Abstract, L4-7; CL2, L3-4; CL4, L65 to CL5, L3), because software components represent the core functional pieces of an application and deal with concepts specific to the application (Abstract L4-7); and it would allow the designers to generate new applications by simply selecting existing components to implement the activities (CL2, L64-66; CL4, L67 to CL5, L2). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the system of **Peterson et al.** with the system of **Dellarocas et al.** that included an input module providing a description of business components, application components, system components, and interactions from an information system design to the construction module; and the business layer being generated from the description of the business

components and interactions. The artisan would have been motivated because software components would represent the core functional pieces of an application and would deal with concepts specific to the application; and it would allow the designers to generate new applications by simply selecting existing components to implement the activities.

Peterson et al. does not expressly teach the construction module generating the predictive model of the information system comprising a business layer, an application layer, and a system layer. **McDonald et al.** teaches the construction module generating the predictive model of the information system comprising a business layer, an application layer, and a system layer (Abstract, L1-6; CL1, L47-59), because that would allow determination of the effect on performance of different distributions of the application processes over the system, at an early stage in the application design (Abstract, L3-6); allow the user to obtain the performance projections for application processes over different distributions of the performance workload (Abstract, L12-16); and the method of layers would divide the model into complementary models for different sets of components and combine the results to provide the performance estimates of the system under evaluation (CL1, L56-59). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the system of **Peterson et al.** with the system of **McDonald et al.** that included the construction module generating the predictive model of the information system comprising a business layer, an application layer, and a system layer. The artisan would have been motivated because that would allow determination of the effect on performance of different distributions of the application processes over the system, at an early stage in the application design; allow the user to obtain the performance projections for application processes over different distributions of the performance workload;

and the method of layers would divide the model into complementary models for different sets of components and combine the results to provide the performance estimates of the system under evaluation.

Peterson et al. does not expressly teach the application layer being generated with standard or customized application component models matching the descriptions of the application components and interactions; and the system layer being generated with standard or customized system component models matching the descriptions of the system components and interactions. **Dellarocas et al.** teaches the application layer being generated with standard or customized application component models matching the descriptions of the application components and interactions; and the system layer being generated with standard or customized system component models matching the descriptions of the system components and interactions (Abstract, L4-7; CL4, L66 to CL5, L3; CL10, L64 to CL11, L1), because software components represent the core functional pieces of an application and deal with concepts specific to the application (Abstract L4-7); and it would allow the designers to generate new applications by simply selecting existing components to implement the activities (CL2, L64-66; CL4, L67 to CL5, L2). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the system of **Peterson et al.** with the system of **Dellarocas et al.** that included the application layer being generated with standard or customized application component models matching the descriptions of the application components and interactions; and the system layer being generated with standard or customized system component models matching the descriptions of the system components and interactions. The artisan would have been motivated because software components would represent the core functional pieces of an

application and would deal with concepts specific to the application; and it would allow the designers to generate new applications by simply selecting existing components to implement the activities.

Peterson et al. does not expressly teach the performance metric calculation module generating performance metrics from the business, application, and system layers to validate the design. **McDonald et al.** teaches the performance metric calculation module generating performance metrics from the business, application, and system layers to validate the design (Abstract, L1-6; Abstract, L12-16; Fig. 2, Item 36; CL1, L30-46), because that would allow determination of the effect on performance of different distributions of the application processes over the system, at an early stage in the application design (Abstract, L3-6); allow the user to obtain the performance projections for application processes over different distributions of the performance workload (Abstract, L12-16); and the method of layers would divide the model into complementary models for different sets of components and combine the results to provide the performance estimates of the system under evaluation (CL1, L56-59). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the system of **Peterson et al.** with the system of **McDonald et al.** that included the performance metric calculation module generating performance metrics from the business, application, and system layers to validate the design. The artisan would have been motivated because that would allow determination of the effect on performance of different distributions of the application processes over the system, at an early stage in the application design; allow the user to obtain the performance projections for application processes over different distributions of the performance workload; and the method of layers would divide the model into complementary models for

different sets of components and combine the results to provide the performance estimates of the system under evaluation.

13.4 As per Claims 5-7, these are rejected based on the same reasoning as Claims 18-20, supra. Claims 5-7 are method claims reciting the same limitations as Claims 18-20, as taught throughout by **Peterson et al.**, **McDonald et al.** and **Dellarocas et al.**

14. Claims 8 and 21 rejected under 35 U.S.C. 103(a) as being unpatentable over **Peterson et al.** (U.S. Patent 6,327,551) in view of **McDonald et al.** (U.S. Patent 5,881,268), and further in view of **Sebastian et al.** (U.S. Patent Re. 36,602).

14.1 As per claim 21, **Peterson et al.** and **McDonald et al.** teach the system of claim 14. **Peterson et al.** does not expressly teach a cost analysis being performed on the validated design to determine whether to proceed to a further development phase. **Sebastian et al.** teaches a cost analysis being performed on the validated design to determine whether to proceed to a further development phase (CL1, L21-25; CL1, L41-45; CL2, L51-57), because that would allow to determine if the design meets the cost requirements of the system (CL1, L41-45; CL2, L51-53). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the system of **Peterson et al.** with the system of **Sebastian et al.** that included a cost analysis being performed on the validated design to determine whether to proceed to a further development phase. The artisan would have been motivated because that would allow to determine if the design met the cost requirements of the system.

14.2 As per Claim 8, it is rejected based on the same reasoning as Claim 21, supra. Claim 8 is a method claim reciting the same limitations as Claim 21, as taught throughout by **Peterson et al., McDonald et al.** and **Sebastian et al.**

Conclusion

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr. Kandasamy Thangavelu whose telephone number is 571-272-3717. The examiner can normally be reached on Monday through Friday from 8:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo Picard, can be reached on 571-272-3749. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to TC 2100 Group receptionist: 571-272-2100.

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K. Thangavelu
Art Unit 2123
June 11, 2005